



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,295	04/01/2004	Peter Chou	GS 200	8562
27774	7590	10/01/2004	EXAMINER	
MAYER, FORTKORT & WILLIAMS, PC 251 NORTH AVENUE WEST 2ND FLOOR WESTFIELD, NJ 07090			GEBREMARIAM, SAMUEL A	
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 10/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/816,295

Applicant(s)

CHOU ET AL.

Examiner

Samuel A Gebremariam

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the U-groove and the V-groove as recited in claims 5 and 6 must be shown or the feature(s) canceled from the claims. Furthermore the limitation of said top finger contains conductive material that flowed into the groove upon attaching said top finger to said die as recited in claim 4 must also be shown or the feature canceled from the claim. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will

Art Unit: 2811

be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 5 and 9-10, 12, 13 and 14, are rejected under 35 U.S.C. 102(b) as being anticipated by Williams et al., US patent No. 6,307,755.

Regarding claim 1, Williams teaches (fig. 20A) a semiconductor device, comprising a bottom lead frame (500), a die (510) attached on the bottom lead form; a top finger (502) attached to the die, wherein the top finger has a groove (notch 508), wherein the groove is provided at a bottom surface of the top finger and adjacent to a contact position between the top finger and the die; and a molding compound (501) for molding the semiconductor device.

Regarding claim 2, Williams teaches the entire claimed structure of claim 1 above the top finger is attached to the die with a conductive material (col. 20, lines 41-58).

Regarding claim 3, Williams teaches the entire claimed structure of claims 1 and 2 above including the conductive material is a solder (col. 20, lines 41-58).

Regarding claim 5, Williams teaches the entire claimed structure of claim 1 above including the groove is a U-shape.

Regarding claims 9-10 and 12, Williams teaches the entire claimed structure of claims 1-3 and 5 above including the groove (508) provided in a bottom surface of the finger portion is adjacent to a contact position between the finger (502) portion and the die (510).

Regarding claims 13 and 14, Williams teaches the entire claimed structure of claims 1, 3 and 9 above including the conductive material is a solder.

The limitation that the groove in the finger portion is configured to receive any conductive material overflow when the finger portion is attached to the die with a conductive material is not given patentable weight because, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). Furthermore the groove structure of Williams is inherently capable of receiving any conductive material overflow.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2811

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4, 6, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williams.

Regarding claim 4, Williams teaches substantially the entire claimed structure of claim 1 above except explicitly stating a conductive material in the groove.

However Williams teaches in figure (28A-28E) where the groove is shown with a solder material.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the mechanism where the groove receives solder material as taught in embodiment of figure (28A-28E) into the embodiment of figure 20A in order to prevent shorting between leads (col. 22, lines 1-9).

Furthermore the limitation that the conductive material that is flowed is considered to be a product-by-process claim. "[E]ven though product-by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Art Unit: 2811

Regarding claims 6 and 11, Williams teaches substantially the entire claimed structure of claims 1 and 9 above except explicitly stating that the groove is a V-shaped groove.

Change in shape is recognized as being within the level of ordinary skill in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to form a V-shaped notch in the structure of Williams, since such a modification would have involved a mere change in the shape of a component. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to form a V-shaped groove in structure of Williams in order to prevent shorting between leads.

6. Claims 7, 8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williams in view of admitted prior art.

Regarding claims 7 and 15, Williams teaches substantially the entire claimed structure of claims 1 and 9 above except explicitly stating that the semiconductor device is a rectifier.

Admitted prior art teaches (fig. 1) a package structure where the device is a rectifier.

It would be obvious to one of ordinary skill in the art at the time the invention was made to incorporate the rectifier device taught by admitted prior art in the structure of Williams in order to form a package for a rectifier.

Art Unit: 2811

Regarding claim 8, Williams teaches substantially the entire claimed structure of claim 1 above including the groove is located closer to a point of contact between the top finger and the die than a passivation ring of the die (fig. 1, admitted prior art).

Conclusion

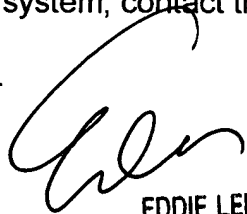
7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Reference A-B and D are cited as being related to packaging structure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel A Gebremariam whose telephone number is (571) 272-1653. The examiner can normally be reached on 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SAG



EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Application/Control Number: 10/816,295

Page 8

Art Unit: 2811

September 19, 2004